1: Belgrave F-3 (no date) 1953 MZ2 Bahrain MZ2

WINDS

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Month	Wind Mean Velocity M.P.H.	Percentage of observations from directions in a year. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
JANUARY	5	13	3	4	6	10	4	24	34
FEBRUARY	5	19	5	4	10	7	3	16	32
MARCH	5	19	10	8	10	8	8	13	23
APRIL	5	17	8	9	7	9	9	16	25
MAY	5	20	10	6	3	2	5	20	34
JUNE	5	21	3	3	1	1	2	22	47
JULY	4	16	2	3	3	2	7	23	43
AUGUST	3	16	6	8	9	6	7	18	29
SEPTEMBER	3	22	3	10	6	4	7	17	28
OCTOBER	3	17	11	7	5	4	4	19	33
NOVEMBER	4	15	4	6	8	9	5	22	29
DECEMBER	5	13	3	4	6	7	3	25	37
MEANS	4.2	17	6	6	6	6	5	20	33

This table is based on nine years observations.

136 There is little wild life in Bahrain. Mongooses and jerboa (Kangaroo rats) are common in the cultivated area and in the desert respectively in the south of the island and on Umm an-Nasaan there are gazelle and hare. During certain seasons of the year migratory birds make their appearance, including the Hubara, the lesser bustard, which is hunted with falcons by the Ruling Family. Other game birds, duck, snipe and sand grouse are sometimes seen in Bahrain. There are, however, many small local birds including bulbuls, hoopoes and a covey of parrots which at various times escaped from their owners and have now become indigenous.

There are many sea birds in Bahrain. The commonest are tern and cormorant, which nest in thousands on small uninhabited islands filling the air for miles around with the noise of their comings and goings and their quarrels over nesting grounds. Herons and flamingoes are frequently seen as well as other smaller species of shore and sea birds.

This is Bahrain, and it is hoped that the information in the following chapters will add to the interest of the reader who is living in Bahrain, or passing through, by telling him something about the country.

CHAPTER II

THE PEOPLE

162 BAHRAIN is often described as a land of contrasts, and this is especially true of its inhabitants, for in this small group of islands, no larger than a pencil point on a map of the world, there are some 109,650 people (1950 census) drawn from over thirty nations of the world. In the same census it was found that 6,000 Bahrainis were working abroad

boat, sucking cigarettes or sipping bitter Arab coffee, but when the water is warmer a longer period is spent in the sea. Food is not eaten during the diving hours as it is considered bad for the diver's health. 228

The splash and swirl of the blue waters of the Gulf, often as smooth and clear as glass, the glistening bodies of the sun-burnt divers, the deep-throated chanting of the Saibs and the mounting piles of dark encrusted shells, are sights and sounds never to be forgotten. From time to time the cabin boy, who is found on each boat, collects the shells in sacks and piles them along the sides of the boat. As the sun sets the crew eat their light meal of dates, fish, bread and coffee and then sink down with pleasure into deep sleep along the decks. Then all that there is to disturb the silence of the night is the crackling of the fire burning on the portable mud hearth, the creaking of ropes and the splash caused by the line of the midnight fishermen catching to-morrow's meal.

Next morning the members of the crew are up early and gather around the heaps of shells which are more easily opened after having been left in the night-air, and with deft flicks of little curved knives they examine the oyster's meat so that not even the smallest seed pearl is missed. The despoiled shells are tossed aside, to be collected later and thrown back into the sea. As the pearls are found, their finders stick them between their toes until they have collected a number, which are then handed to the nakhuda or captain. The latter stores them in a great wooden chest, studded with brass nails after tying them in small squares of red cloth, that being the colour which is believed to show pearls to their best advantage. When all the shells have been opened the remains are thrown overboard, the decks swabbed down and the day's diving commences.

From time to time boats return to Bahrain to collect fresh provisions and for the medical treatment of the crew. Fresh water, surprisingly enough, is less of a problem, for near many of the pearl banks there are submarine fresh water springs, some of which have been controlled by pipes affixed by the Bahrain Government. The monotony of the diver's day is also broken by the visits of "Tawawish," pearl buyers, who come out in launches to the banks to offer ready cash for their purchases, and by visits of hospital and police launches from Bahrain. The end of the diving season, as well as the date of its commencement, is laid down by the annual proclamation of the Bahrain Government. [312] [437] [656]

Despite the tales of travellers, sharks and saw-fish are not a very great menace to divers, they are in fact a rarity and for many years no diver has been attacked by either fish. The blue jelly-fish is more feared than either, for with its long tentacles it can give a most unpleasant sting, and it is to combat it that in the jelly-fish season many divers wear a form of cotton combinations covering all parts of the body except hands and eyes. The detrimental effect of diving on the men's health is often exaggerated, and with the better diet and medical treatment the divers of today are a healthy set of men and compare favourably with workers in other industries. [136]

Some twenty years ago a Danish scientific expedition paid two visits to the Persian Gulf to report on the fish found in it. They discovered that there were over 400 species.

AGRICULTURE

Parts of Bahrain have always been fertile and very probably in ancient times more land was under cultivation than is being used today. The gardens of Bahrain are mentioned by many ancient visitors to the islands. The captains of Alexander's ships described Tylos, the ancient name of Bahrain, as "well-wooded and productive" while Idrisi, writing in the 12th century, says that the "capital of Awal (Bahrain Island) is Bahrain; this is a town well populated whose environs are fertile and produce corn and dates in abundance." It could be that the capital of Bahrain mentioned by Idrisi was Bilad al-Qadim, the description would seem to imply this.

Formerly the Bahrain gardens were irrigated from natural springs and surface wells, the water either flowing from the springs into the gardens or being lifted from wells to the level of the land by various forms of water scoops. The most commonly used is the Shaduf. A man stands near the edge of the well and draws up the water in a sheep skin bag attached by ropes to a counter-balanced pole. In larger wells donkeys or oxen are used, walking endlessly up and down a ramp pulling the water to the surface from where it runs down into irrigation channels. As the rainfall in Bahrain is almost negligible all agriculture depends upon irrigation.

In the 20's and 30's Major Frank Holmes drilled many artesian wells in Bahrain which completely changed Bahrain's system of irrigation. By introducing these wells into the island Major Holmes did much to increase the area of land which could be cultivated, but artesian wells turned out to be a mixed blessing, for in the following years so many wells were drilled that the water head went down and some of the gardens in the south of Bahrain dried up. Today this problem is being met by a government Water Committee which decides whether and under what conditions new wells may be drilled, it tries to ensure that the water resources of the islands are maintained at their present level or even increased by the utilisation of the many large springs of fresh water which lie under the sea around the shores of Bahrain.

The two commonest crops in Bahrain are dates and lucerne (alfalfa). the latter is often grown in the shade of the date palms where its vivid greenness provides a contrast to the brown and grey-green of the date palms. There is little good fruit in Bahrain although a certain number of fruit trees are cultivated, these include citrus, tamarind, pomegranate, fig, guava, terminalia (indian almond) mango, bananas, grapes and kanard (a small apple-like fruit). European vegetables are grown in the cold weather and other ground crops include sweet potatoes, melons, tomatoes, ladies fingers, egg plants, onions, garlic and pumpkins.

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ZELLAQ

361 South again of Malakiya is Zellaq, the southernmost village on the
342 western Coast of Bahrain and approximately three miles west of Sakhir. A road runs from Zellaq to Awali and is much used by BAPCO employees coming to swim at the former place. The houses of Zellaq village, which are of stone, are built along the shore and many of them are large and spacious. As a result of the activities of BAPCO, Zellaq village has increased in size and prosperity and now contains a number of substantial white stone buildings which are conspicuous from a long distance across the flat and sandy plain that surrounds it.

162 The inhabitants of Zellaq are Sunni Arabs; some are from the Dawasir tribe, and many of them are dependents of the Ruling Family.
311 North of the village there are a number of large gardens, irrigated by innumerable artesian wells, which are owned by members of the Ruling Family and by their servants ; these gardens form a green belt along the two miles of coast between Zellaq and Sedad.

312 The Bahrain Petroleum Company has a pump house at Zellaq which supplies Awali with much of its water and Zellaq was also once the discharging point for tankers bringing crude oil from Saudi
517 Arabia, before the submarine pipe-line was laid. Near the pumping station is the BAPCO Plage, the excellent bathing place which is much used by the employees of BAPCO, particularly in the Summer evenings.

RAS AL-BARR

529 This, the southernmost point of the Bahrain islands, is a popular
484 place for summer picnics, but the approaches to it are difficult, and
491 although never dangerous they can easily cause trouble to visitors by the softness of the sand. It is best to travel in parties with not less than two cars, so that one can come to the help of the other if necessary, and care should be taken to keep to the tracks, however faintly indicated rather than to carve out new roads in the desert. The road to Ras al-Barr from Zellaq first passes through Mutalla, the Ruler's hunting lodge, while that from Awali past the Jebel passes another hunting lodge at Rumaitha before joining the Western road at Akala. From here the road goes south, past the swamps on the coast and along the narrow strip of sand which marks the end of the island.

136 In certain seasons of the year the shores along this part of Bahrain
262 are covered with the eggs of sea-birds, and many Arab dhows anchor off the coast while the crews remove the eggs for food. If one is lucky, while driving down the coast, hare and gazelle may be seen, as well as rose-tinted flamingoes on the shore.

MUHARRAQ ISLAND

MUHARRAQ

491 The visitor from Manama approaches Muharraq by crossing the
486 1½ mile long causeway and Shaikh Hamed Bridge, completed in 1942,

of the Egg," a small village with many seafaring inhabitants. To the north of Sitra there is a very pleasant sandy beach looking towards Umm a-Hasan where there is excellent bathing; the view also includes Nabih Salih and Jaziyra. There is deep water to the north of Sitra, and it is here that the Bahrain Government is building the new Port of Manama with a pier running into deep water from the shore between Umm al-Hasan and Jufair.

361 [504]

JIDDA

This island is about 2½ miles from Budaiya. It is small and rocky and in appearance unlike any of the other Bahrain Islands. Its high cliffs rise abruptly from the water and a few fort-like buildings are silhouetted against the sky-line. On the south side of the island there is a level strip of land which is extensively cultivated. Jidda is Bahrain's penal settlement; here all long term prisoners are detained, spending their time cutting stone, weaving and working in the gardens. There is a small house on the top of the cliffs above the jetty which catches all the wind in the summer and which is used by the Adviser to the Bahrain Government. Being a prison island, Jidda is forbidden to general visitors.

101 133 697 [486]

The stone quarries at Jidda are of great age and it is likely that the large stones which line the graves in the burial mounds were cut here. There is an Arabic inscription roughly cut on one of the cliffs which reads as follows :

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"During the month of Shaban in the year 968 (April/May, 1561) there was completed the cutting of the 100,000th rock for the mending of the tower of the Bahrain fort in the wazirate of the Great Wazir Jilal ad-Din Murad Mahmud by the hand of the slave . . . " (a few words after this are unreadable).

UMM AN-NASAAN

This, the second largest of the Bahrain islands, lies a few miles across the shallow water to the south of Jidda. It is sandy and flat, with the exception of two small limestone hills towards its centre which break the monotony of its shape. At the north end of the island there are several natural springs and artesian wells from which extensive date gardens are irrigated; they were planted by the late Ruler of Bahrain, H.H. Shaikh Hamed, who also established on the island a herd of black buck and gazelle, the former being imported from India and the latter from the mainland of Bahrain.

101 133 312 [136]

There is evidence of ancient habitations on Umm an-Nasan, foundations of many old houses are visible and sherds of pottery can be picked up. Local legend has it that Nasaan, after whom the island is named, was one of the early rulers of Bahrain, but this legend has not been substantiated by historical research.

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contains a substantial amount of water which is protected from evaporation by the narrowness of the well's neck. The Bahraini members of the Naim tribe who live here do not occupy the fort but live in two villages in the neighbourhood, which have the advantage of being near wells. On the whole, however, Zubara is most unfertile, the soil is thick with salt which appears on the surface and it is easy to see that the only *raison d'etre* of the town was the sea and commerce. The fort itself was once connected with the sea by a long, deep canal, some 100 feet wide, which served the dual purpose of filling the moat about the fort and permitting ships to approach it. Today the eastern section of the canal has been filled in by sand, and the sea only reaches about 1½ miles inland.

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[162]

Gazelle abound in Zubara, and also jackals.

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526 226 [136] about 6-in. to 9-in. long which trolls well because of its streamlined shape. The fish most commonly caught by trolling are listed hereunder; those marked with an asterisk have also been reported, but on rare occasions :—

Sea bass.
King Mackerel ("Chanad" or Indian seer).
Leer Fish.
Rock Cod.
Barracuda.
*"Sikkan" (English name unknown but weighs up to 60 lbs.).
*Sailfish.
*Shark (usually sand sharks up to 150 lbs.).
*Bonito.

Bottom fishing in the deeper water a mile or so off the coast, using crab, cuttlefish or large prawn as bait, yields Queen-fish, "Hamriyah" (English name unknown but similar to red snapper) and several kinds of rays, in addition to three or four of the above-listed species caught trolling. Many of these fish weigh 30 to 60 lbs. and give very good sport on a light sea-rod with a reel carrying about 250 yards of cutty hunk or nylon line with 18 or 24 lb. breaking strain. The American type 5-star drag reel is popular for trolling because by insulating the shock of the initial fierce strike, it enables lighter tackle to be used. Sailfish weighing about 55 lb. have been caught near the Black Buoy, the northern entrance marker to the Sitra channel, on at least two authenticated occasions. A game-fishing maxim says that "where there are sailfish, there are marlin" and, although not yet reported in local Bahrain waters, marlin have been seen as near as Umm Said on the east coast of the Qatar peninsular.

Bass (Ar. "Zbaiti"), "Shari" (12-in. long, drab colour), "Saafi" (about 24-in. long, white colour) and a colourful variety of small fish up to 5-6 lb. are caught fishing from the shore at many places around the coast. A trout rod or other light bait-casting rod with a 2½-oz. tip gives excellent sport and can be most exciting when, for instance, a 10 lb. sea bass is hooked and landed, as was done with such tackle in the 1952 season.

The spring and autumn are the best fishing seasons, although fish are sought and caught by the enthusiasts throughout the winter, except during the very cold spells. The hot summer months of July, August and September are the worst or fishing in Bahrain, the Bahrainis say that the fish go out to the deeper water to keep cool, in which they are both missed and envied by the local "Isaac Waltons," left ashore to prepare their tackle for the coming autumn season.

526 231 *Riding and Racing*. Bahrain offers excellent opportunities for riding, but it is only recently that these have been recognised by European and American residents in the Islands. The BAPCO Club has a stable of twelve horses at Awali and riding classes are held for children and adults. In Manama a number of Arab merchants keep horses for

Pollution of the soil is common, although the practice is discouraged in the towns.

Fauna and Flora

Except for investigations relating to the anopheline vectors of malaria, few entomologic studies have been undertaken in Bahrain. Five species of anopheline mosquitoes have been identified—*Anopheles stephensi, A. culicifacies, A. sergenti, A. fluviatilis* and *A. pulcherrimus*. *A. stephensi* breeds in shallow wells, seepage pools, water storage tanks and irrigation ditches, and is responsible for a large part of the malaria transmission on the islands. While *A. culicifacies* is probably a vector in some localities, it is generally regarded as of minor importance. *A. gambiae* is not indigenous, but it is sometimes found on board dhows upon arrival in port. Species of *Culex* are widespread. However, no vectors of filariasis have been recorded locally. Species of *Aedes* are known to be present.

A campaign for the control of malarial mosquitoes has been carried on by the government since 1939. Supplementary programs are conducted by the Bahrain Petroleum Company in the vicinity of its installations and throughout the southern half of Bahrain Island. The antilarval measures include the treatment of breeding places with oil or DDT preparations and the stocking of wells and drainage ditches with the larvivorous fish, *Gambusia*. The prevalence of anopheline mosquitoes reached minimal proportions in Manama by 1948, but was still extensive in the surrounding suburbs and date garden areas. The following year, the spraying of the marshes, rubbish dumps and gardens around the main towns and the residual spraying of the houses and the bazaars with DDT and Gammexane preparations were introduced for the suppression of both flies and mosquitoes.

Flies are abundant, although their numbers have been markedly reduced in the towns since the inauguration of the residual

136 744 spraying campaign. The existing species have not been determined: several are probably implicated in the spread of intestinal and eye infections. All forms of human lice are present. Numerous species of fleas occur, including presumably *Xenopsylla cheopis*, the usual vector of plague, which was frequently epidemic in the past.

Food Sanitation

744 656 The sanitary supervision of the markets, coffee shops, bakeries and other premises where foods are prepared or sold is the responsibility of the municipal authorities in Manama and Muharraq. Little governmental control has been attempted, but the new public health division plans to develop 434 inspection services. Most of the meat used is imported, and is not subject to inspection in Bahrain. There are slaughterhouses, however, in Manama and Muharraq which are operated under the supervision of the mu- 234 nicipal officers. No regulations exist governing the sale of milk. It is obtained from small herds of goats, and is often contaminated.

HEALTH SERVICES AND MEDICAL FACILITIES

Health Organizations

744 The Public Health Department of the Bahrain government is responsible for the protection of the health of the inhabitants and the enforcement of international quarantine regulations. It is administered by the Chief Medical Officer, whose headquarters 743 are located at Manama. The department 744 came into being in 1936, when the government hospital was erected, but, with the exception of malaria control measures, its functions were concerned primarily with the operation of medical care facilities until its 744 reorganization in 1952. In that year, public health services were developed within the department, which now incorporates separate curative and preventive divisions. The port health authority, formerly under the Indian Medical Services, was taken over by

164 typhoid A infections, a large proportion of which occur among nonresidents.

Dysenteries. Both amebic and bacillary dysentery are widespread. The percentage [136] of carriers of *Endamoeba histolytica* is believed to be high, but the relative infection rates in the general population are uncertain. Over 1,000 cases of "dysentery" were treated in government institutions in 1950. The cases among men patients registered in the government isolation hospital in the two years from November, 1948, through October, 1950, totaled 120 for the first year and 176 for the second. Amebiasis was diagnosed in 59 to 71 cases and bacillary dysentery in 56 to 67. Mixed infections were recorded in a few cases, while in the second year, 30 cases were classified as diarrhea. Laboratory confirmation is not attempted, except in hospital cases, and the results of bacteriologic examinations are incomplete [136] in many instances. *Shigella paradysenteriae* (Flexner) predominates among the recognized infections, but Shiga, Schmitz, Sonne and Newcastle strains are encountered with 164 considerable frequency. The health authori- 744 ties anticipate a diminution in the prevalence of dysentery in Manama and Muharraq as a result of the fly control campaigns initiated in 1950.

Cholera. Cholera was formerly recurrent in the Persian Gulf ports, all of which are exposed to spread of the infection by coastwise traffic. Within recent years the rigorous application of quarantine measures has curtailed the number of outbreaks. Cholera has not appeared in Bahrain since the middle 1930s, when it was traced to the crew of a dhow visiting the port of Manama.

164 **Helminthiases.** Infection with intestinal 136 worms is almost universal. The rate of infection with *Ascaris lumbricoides* is estimated at 95 to 100 per cent. Heavy infections are encountered frequently, especially in children. Enterobiasis and trichuriasis are common. Taeniasis, caused by the beef tapeworm, *Taenia saginata*, is sometimes seen. A few cases of echinococcosis are treated in the local hospitals each year; the

136 164 majority are believed to have been acquired elsewhere. Cases of ancylostomiasis and schistosomiasis are occasionally observed, primarily among non-Bahrainis, yet no indigenous foci of infection are known to exist.

Diseases Spread Chiefly Through the Respiratory Tract

164 **Tuberculosis.** Tuberculosis is widespread, but little precise information is available regarding its prevalence in the local population. The disease is believed to be extensive in Arabia, particularly among 164 the Bedouin. In Bahrain, the migration of 464 workers to and from the mainland, over- 515 crowding and the generally low standards 758 of personal hygiene are regarded as factors influencing the spread of the infection. The facilities for diagnosis and treatment are 734 inadequate. The government operates a 13- 758 bed tuberculosis sanatorium and provides treatment for tuberculous cases in its regular hospitals and dispensaries. It also subsidizes the transportation of certain cases to India for treatment, since many individuals do not respond favorably under the climatic conditions prevailing in Bahrain. About 220 to 350 cases were under observation in government institutions annually from November, 1948, to November, 1950. 164 Pulmonary tuberculosis predominates, but a high rate of nonpulmonary infections also is encountered.

Smallpox. Bahrain is especially vulnerable to the introduction of smallpox from the neighboring Persian Gulf territories, Pakistan and India, and outbreaks are recorded at frequent intervals. Large-scale epidemics were reported in 1941-42 and in 1948-50, with sporadic cases in the intervening years. The most recent epidemic started in December, 1948, in the Hora section of Manama, and spread in a series of localized outbreaks, persisting into 1950. Eighty-six cases were transferred to the quarantine hospital in 1949, and about one third of that number the following year. The percentage of unrecognized infections

was also believed to be high in many districts. The fatality rates among the hospitalized cases averaged 6 to 22 per cent. The disease subsided in the summer of 1950, and no cases were observed in 1951.

Vaccination against smallpox is not compulsory, but the health authorities endeavor to promote it in the school population. In 1948-49, a house-to-house campaign was carried on in the infected sections of Manama, and vaccination centers were established in the outlying districts. Vaccination is required of travelers to Bahrain, and persons who arrive without valid certificates of immunization are vaccinated by the medical officers upon landing.

Other Infections. Pneumonia is prevalent: a large proportion of the cases are probably bronchopneumonias. Measles, mumps and whooping cough are endemic, and often epidemic. Chickenpox and poliomyelitis are also endemic, but the reported cases are usually few in number. Meningococcus meningitis is sporadic, and occasional small outbreaks are recorded.

Diseases Spread or Contracted Chiefly Through Contact

Venereal Diseases. Venereal diseases constitute a major problem, due to the transitory nature of a large section of the population. Local medical authorities believe that the syphilitic infection rate approximates 60 to 70 per cent. Numerous mild nonvenereal infections are observed among children, although the familiar manifestations of congenital syphilis are relatively rare. Gonorrhea is widespread, but chancroid and lymphogranuloma venereum are of minor significance. Cases of venereal disease are treated at the isolation hospital and the various dispensaries.

Diseases of the Eyes. Eye infections are prominent throughout this region. Ignorance of the basic principles of hygiene and the prevalence of flies, as well as the irritating effects of sand and wind during the *shamal* seasons, are underlying factors in the spread of trachoma, conjunctivitis and

other eye diseases. Trachoma is widely distributed, and estimates of prevalence range from 35 to 90 per cent, depending upon the locality. Trichiasis is frequent. The most serious effects are often observed among immigrants from Saudi Arabia, the Trucial Coast and Iran. In an average of over 1,200 men patients receiving medical or surgical ophthalmic treatment in the government hospital in each of the two years 1949-50, about 30 per cent were suffering from trichiasis. Special attention is given to the treatment of eye diseases in all the hospitals and dispensaries, and clinics are conducted in some of the boys' schools.

Diseases of the Skin. Mycotic infections of the skin are common, but the children appear to be relatively free from favus. In spite of the low standards of hygiene among the poorer inhabitants, scabies is seldom seen.

Leprosy. Although leprosy is present among the Baharna, it is rare in the Arab community. Cases are found on all the islands, probably with greatest frequency on Sitra. The severity of the infection seems to be decreasing, and the percentage of childhood cases in recent years has been low. The actual number of lepers in the indigenous population is uncertain: it was believed to be about 100 in 1951. No segregation is practiced, but lepers are forbidden to congregate and beg in the towns.

Other Infections. Sporadic cases of tetanus and of tetanus neonatorum occur occasionally. Rabies is not recorded at present.

Diseases Spread by Arthropods

Malaria. Malaria was formerly one of the foremost disease hazards in Bahrain, but in recent years its importance has declined progressively with the expansion of the anopheline control program. The present morbidity is believed to be insignificant in comparison with that encountered before the inauguration of the government's antimalaria campaign in 1939. Treatment statistics are of doubtful value, yet they are

164 useful in portraying the persistence of the
758 disease. Records for 1949-50 indicate that between 1,700 and 2,000 persons were treated annually for malaria in the government hospitals and dispensaries alone.
164 There are normally two seasons of transmission—from the middle of March through June, with a peak early in June, and from the middle of September to the middle of January, with a peak in November. When climatic conditions are exceptionally favorable for anopheline breeding, however, transmission may take place throughout the year, with a minimum of activity in the winter months.

Because of its location on the edge of the date garden belt, Manama has always been highly malarious. As the result of control operations, the degree of infection has lately been reduced to a low level in the town, but up to 1950 it was still extensive on the outskirts. In limited malaria surveys made in January and again in May and June, which were reported in 1938,[1] the spleen rate among 234 boys of 4 to 14 years of age examined in Manama averaged about 39 per cent, while the corresponding rate among 137 boys in Muharraq was 13 per cent. The parasite indices in January were calculated at about 22 per cent in Manama and 6 per cent in Muharraq.

136 In general, *Plasmodium vivax* infections
164 predominate in June and *P. falciparum* in
[167] November. In the opinion of some local medical authorities, the prevalence of *P. falciparum* was enhanced by the mobility of military and civilian personnel in this region during the war years 1939-45, but it is now diminishing. In 249 blood films prepared in January in connection with the above investigation, malaria parasites were detected in 34; *P. falciparum*, in 10; *P. vivax*, in 13; and *P. malariae*, in 10; while one showed both *P. falciparum* and *P. malariae*. *Anopheles stephensi* is considered to be the principal vector, but *A. culicifacies* is probably implicated to some extent in certain localities.

164 **Plague.** Severe outbreaks of plague have

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